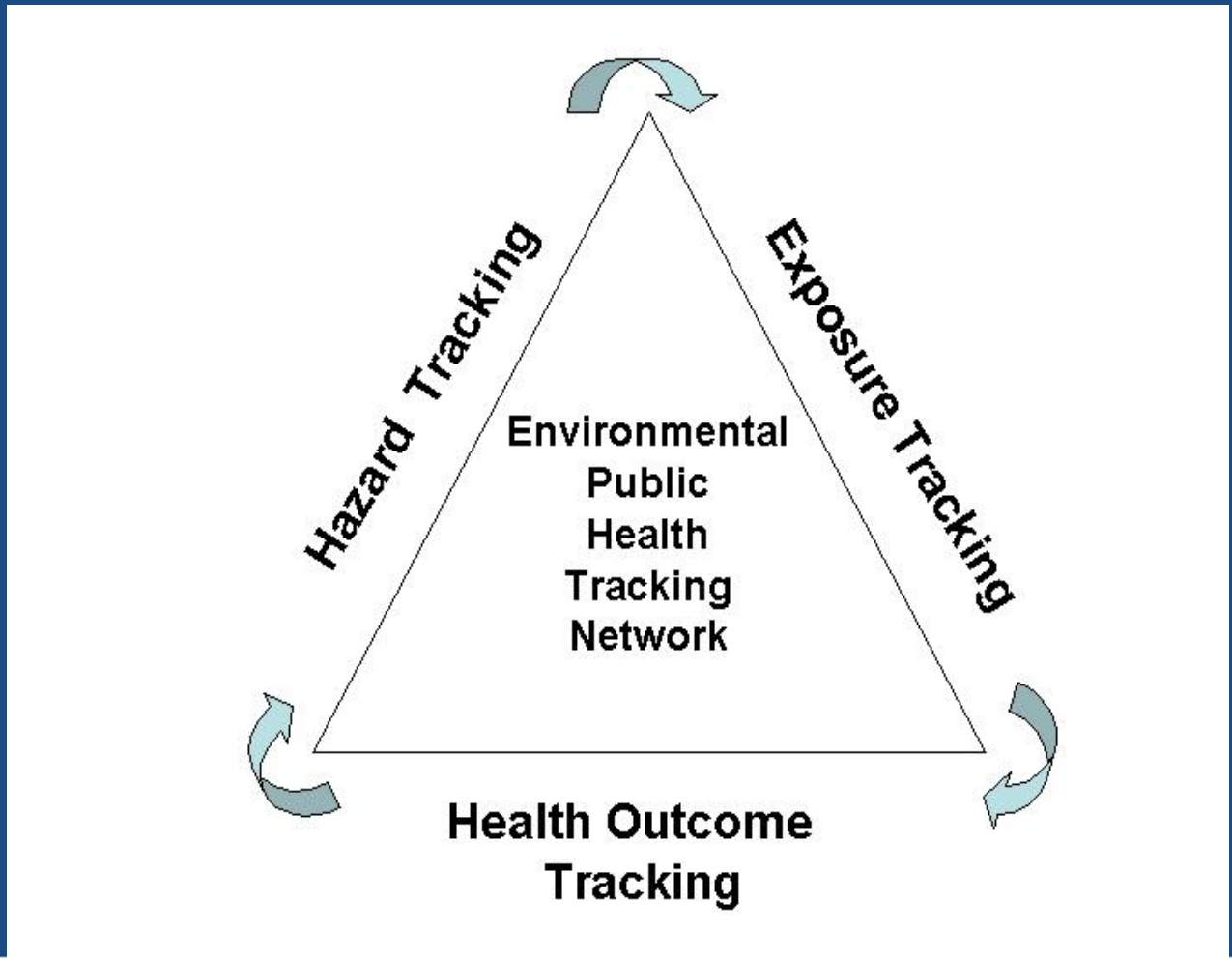
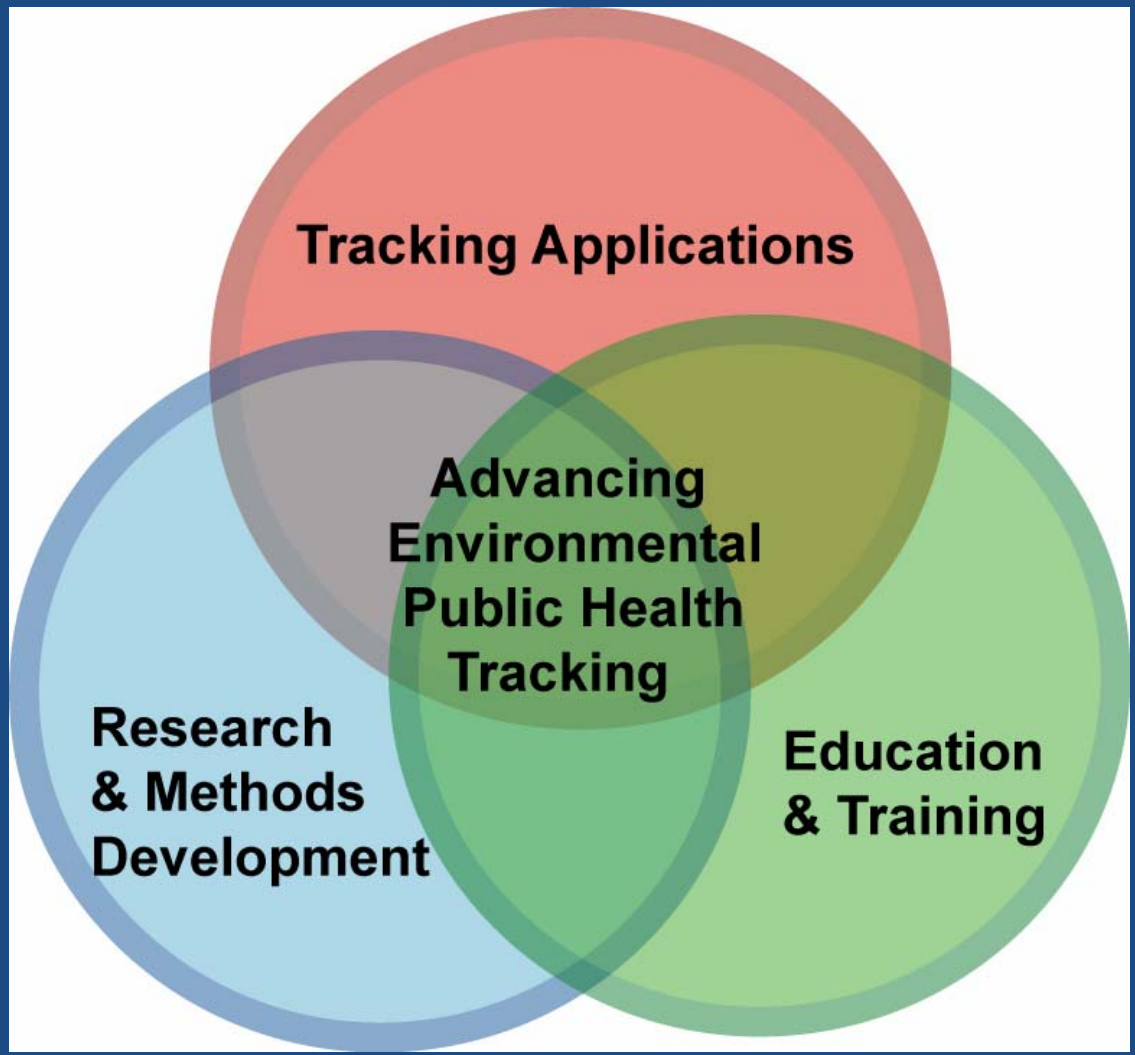
JOHNS HOPKINS BLOOMBERG SCHOOL of PUBLIC HEALTH

# Tom Burke

## Center for Excellence in Environmental Public Health Tracking



# Center Overview



# Center Overview

- **Tracking Applications**
  - Pew Update
  - Tracking Atlas
  - Cluster Capacity
  - Policy Assessment
- **Education and Training**
  - Doctoral Student Fellowships
  - Faculty Fellowships
  - Curriculum Development
- **Research and Methods Development**
  - Epi Study:  Respiratory Infections and Fine Particles

# Tracking Applications: Pew redo

**Purpose:**

1) Follow-up on work of 2000 Pew Environmental Commission Report
   - Extend trend data for selected health endpoints identified in Pew I
   - Review availability of data for endpoints tracked in Pew I, compare with endpoints tracked since 1997

# Tracking Applications: Pew too...

**Purpose (continued):**

2) Evaluate the utility of a national dataset for tracking purposes

3) Examine actual trends in environmentally-related health endpoints when possible

4) Revisit state and local tracking capacity and needs

# Environmental Health Outcomes: Update

| NHIS Adult Conditions | | Rates Among Adults 18+ | | | | | | Change 97-02 |
|---|---|---|---|---|---|---|---|---|
| Condition | Description | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | |
| **Diabetes** | Ever been told by a doctor | 5.1% | 5.3% | 5.4% | 5.9% | 6.4% | 6.5% | **27%** |
| **Migraine headache** | Had during past 3 mo. | 15.9% | 15.7% | 15.4% | 14.9% | 16.6% | 15.1% | **-5%** |
| **Asthma** | Ever been told by a doctor | 9.0% | 9.0% | 8.5% | 9.3% | 10.9% | 10.7% | **18%** |
| **Asthma attack** | Attack in past 12 mo. | 3.7% | 3.4% | 3.4% | 3.5% | 3.8% | 3.7% | **1%** |
| **Chronic bronchitis** | Told by a doctor in past 12 mo. | 5.0% | 4.6% | 4.4% | 4.6% | 5.5% | 4.4% | **-11%** |
| **Emphysema** | Ever been told by a doctor | 1.6% | 1.5% | 1.4% | 1.5% | 1.5% | 1.5% | **-8%** |

# Tracking Applications: Atlas

**Purpose:**

1) Pilot different approaches to tracking applications of hazard, exposure, and outcome data

2) Conduct geographic, temporal and comparative analyses on key indicators using national datasets

3) Evaluate methods to present tracking data

# Tracking Applications: Atlas

## Case Studies:

- **Urban Sprawl Indicator**
  - Indicator based on % of housing unit development between 1990 & 2000 that occurred in low density areas
  - Examined in relation to obesity
- **Air Toxics Indicator**
  - Indicator based on Benzene, 1,3 butadiene, and ethylene oxide emissions
  - Examined in relation to leukemia risk
- **Mercury Emissions Indicators**
  - Indicator based on mercury emissions from US EPA datasets
  - Examined in relation to fish advisories

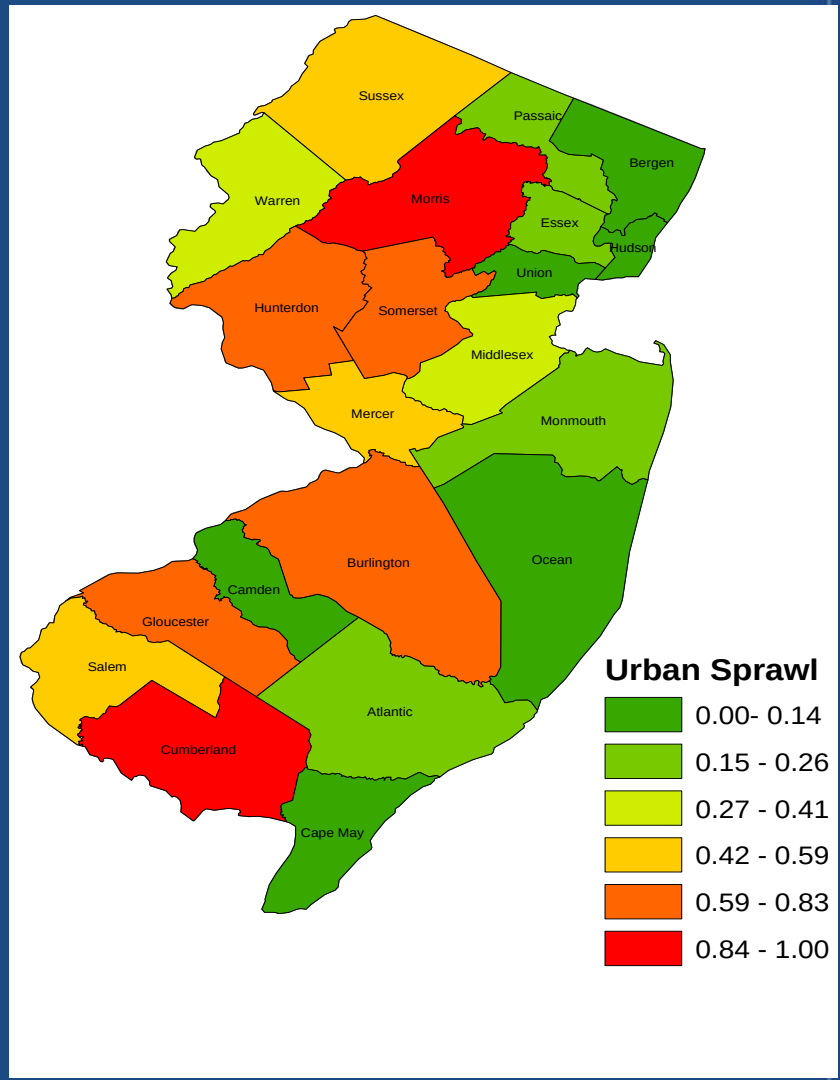
# Tracking Applications: Urban Sprawl

## Conclusions:

- Urban sprawl indicator provides a simple & valuable tool for identifying sprawling areas.

- No concrete conclusions about the relationship of urban sprawl & obesity can be drawn from this analysis.

- Future work should examine the relationship of urban sprawl & obesity (and other health endpoints) in other states



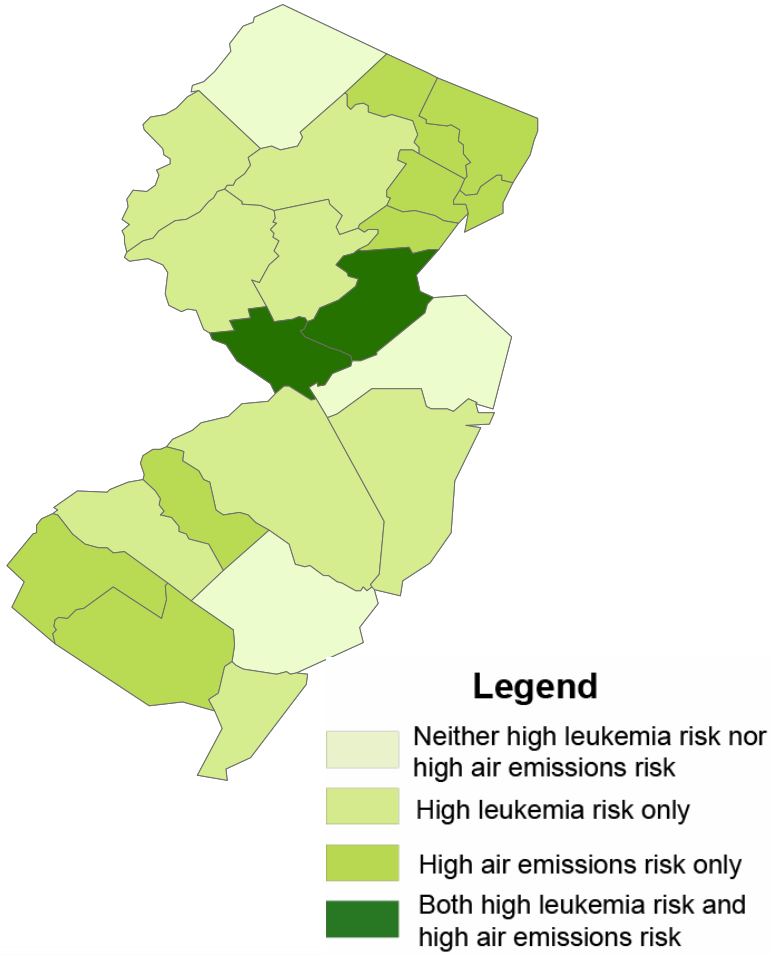
# Tracking Applications: Air Toxics

## Conclusions:

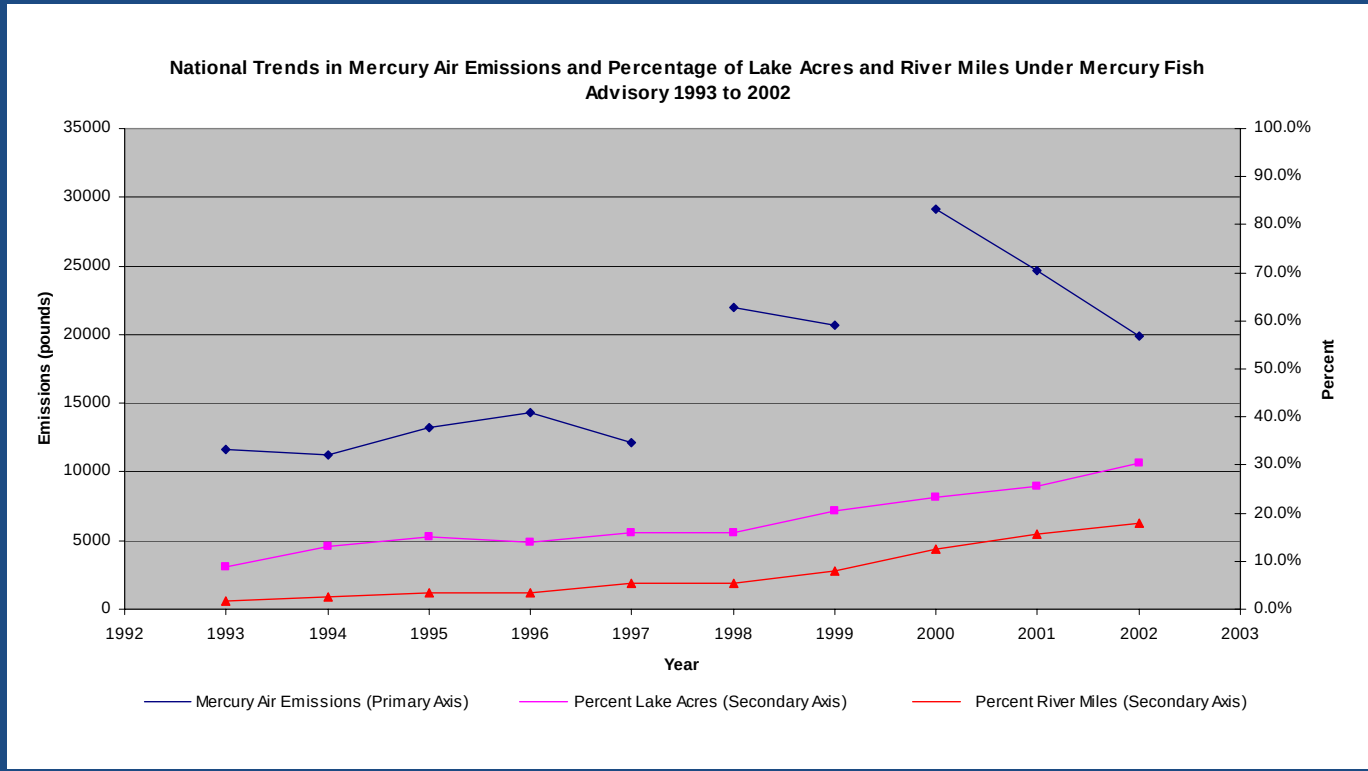
- High emissions of benzene, 1,3 butadiene and ethylene oxide do not appear to indicate high leukemia risk

- No apparent relationship doesn't mean no relationship – confounders?

- Availability and consistency of data are key concerns



# Tracking Applications: Mercury Emissions




## Conclusions:

- Some regional patterns seen for states with high mercury releases and states with high lake and river advisories.
- Results may be indicative of mercury transport patterns.

# Tracking Applications: Cluster Capacity

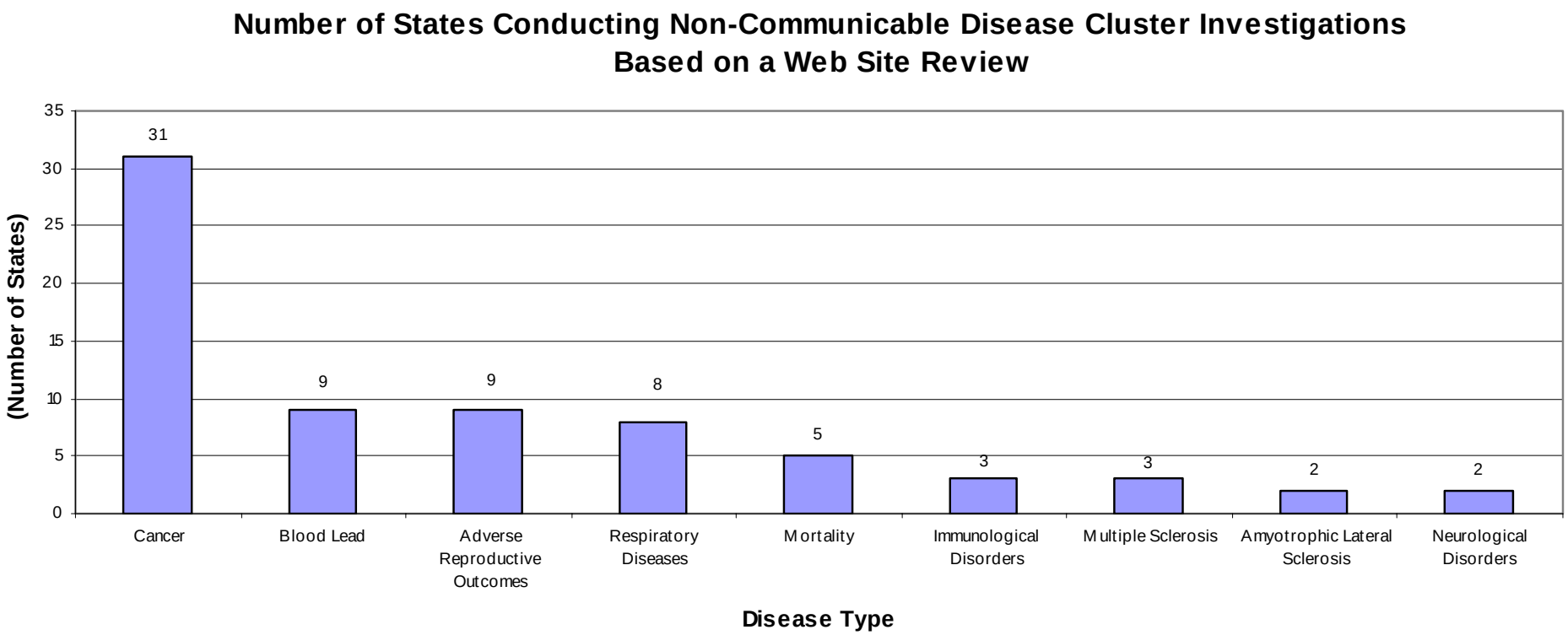
**Purpose:**

1. To identify for non-communicable disease clusters:
   - State public health agency capacity to address disease clusters
   - Protocols to address potential disease clusters
   - Disease endpoints investigated in cluster evaluations
   - Trends in state public health agency-led cluster studies

**Methods:**

A 4 step, systematic website inventory

# Tracking Applications: Cluster Capacity



# Tracking Applications: Policy Assessment

**Purpose:**

**Assess state experiences, needs and opportunities relating to tracking policies**

- **Identify current policies for applicability to tracking**
- **Determine policy gaps and opportunities**
- **Develop policy recommendations to advance tracking**

# Education & Training: Doctoral Fellowships

**A Scientific Framework for Evaluating Children's Environmental Public Health Indicators: A Case Study Analysis**

**Kristen Chossek-Malecki**
**Dept Health Policy & Mgmt**

**Tracking the Environmental Fate and Associated Potential Human Health Risks of Persistent High Volume Chemicals**

**Jochen Heidler**
**Dept Environ Health Sci**

**Prenatal Exposure to PCBs and PBDEs and associated Thyroid Hormone Status, and Infant Birth Outcomes**

**Julie Herbstman**
**Dept Epidemiology**

**Arsenic Exposure, Myocardial Infarction and Diabetes in Washington County, Maryland**

**Ana Navas Acien**
**Dept Epidemiology**

**Spatial Distribution of Arsenic in Maryland Groundwater and Potential for Tracking Human Health Effects**

**Robin Streeter**
**Dept Epidemiology**

**An Evaluation of Maryland's Reduction of Lead Risk in Housing Law**

**Michele Twilley**
**Dept Environ Health Sci**

# Education & Training: Faculty Fellowships

Fellowships for faculty members who:

- Conduct or provide support for research related to the tracking center's mission of advancing knowledge of potential links between environment and health effects; and

Fellowship recipients will:

- Support the Center's technical assistance efforts to students and state partners in the areas of data linkage, environmental public health surveillance analysis and visualization techniques, and methods related to communicating surveillance analysis finds to a broad range of stakeholders

# Education & Training: Curriculum Development

A modular EPHT Curriculum based on tracking-related literature and core competencies.

- Module 1: What is Environmental Public Health Tracking?
- Module 2: What to track?
- Module 3: How to track?
- Module 4: Methods for tracking
- Module 5: What to do with results?

# Research: Respiratory Infections and Fine Particles

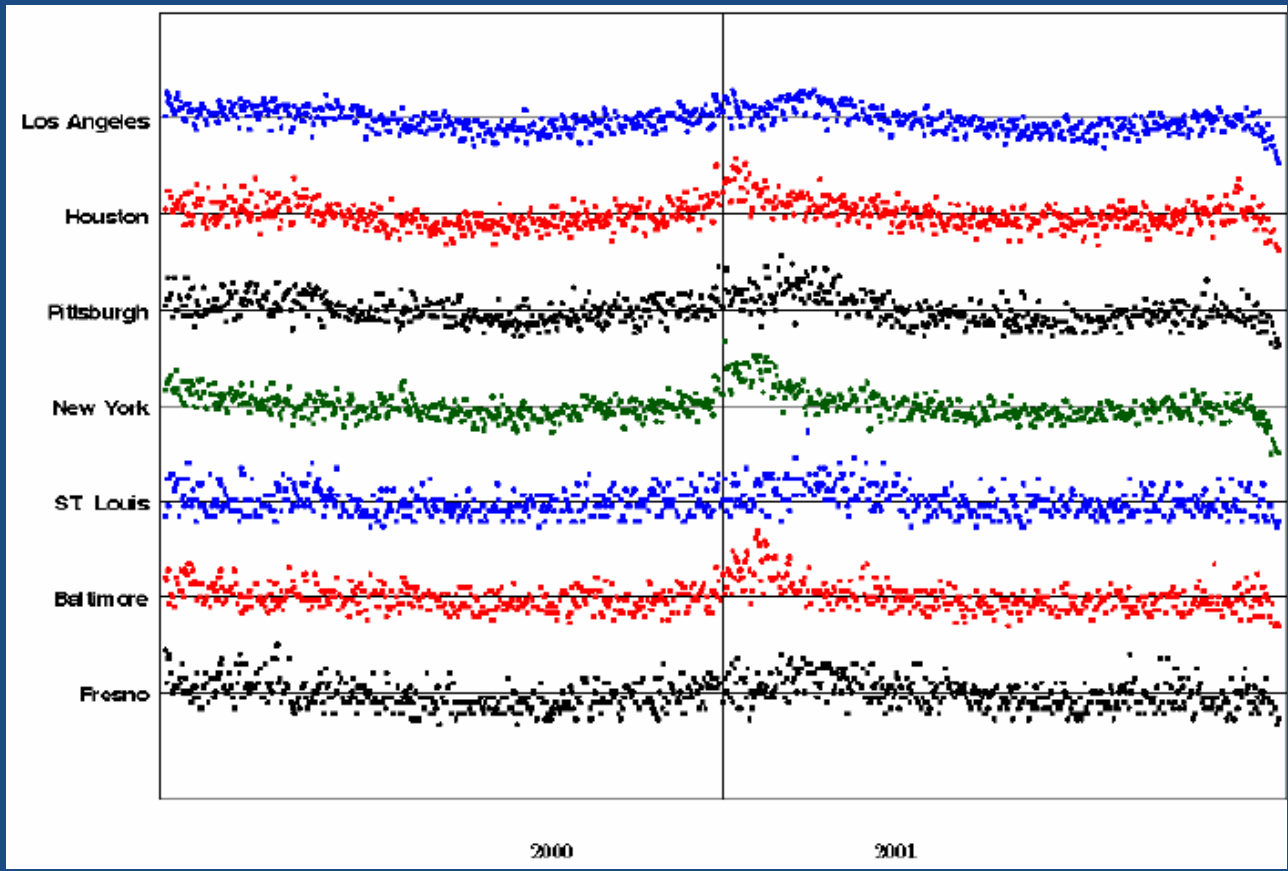
## Purpose:

1) Assemble a national data base on respiratory infections, fine particulates, and weather
2) Estimate community-specific, regional, and national average relative rates of hospital admissions for respiratory infections associated with short-term changes in fine particulate matters (PM2.5).

## Integrated Databases:

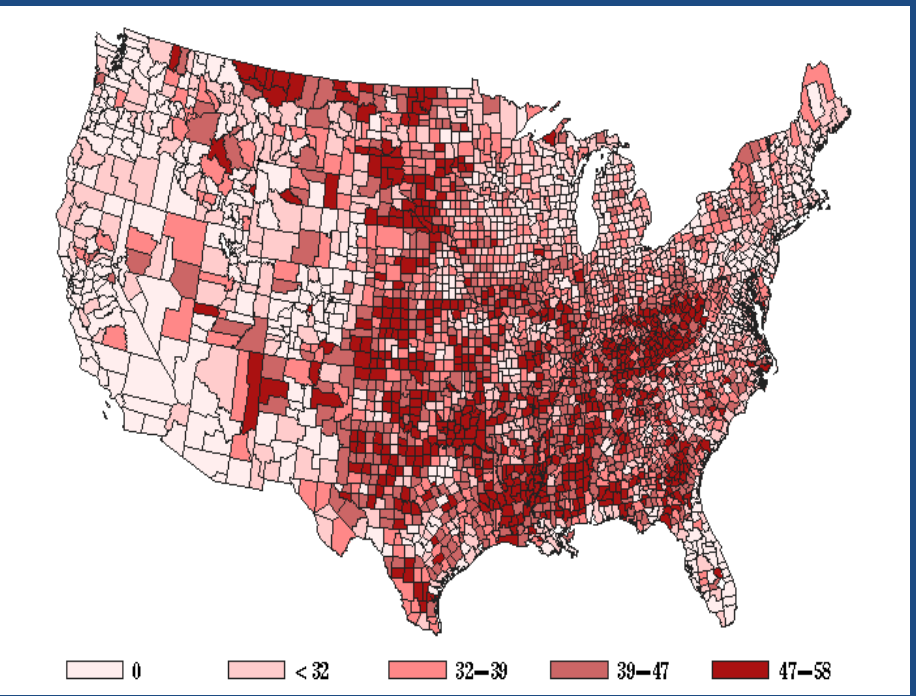
1) National Medicare Cohort (MC) comprising individual-level data on disease, age, gender, and race for the entire population of US elderly;
2) Daily levels of environmental exposures to air pollution and weather for several thousand monitoring stations across the country
3) US census data

# Research: Respiratory Infections and Fine Particles

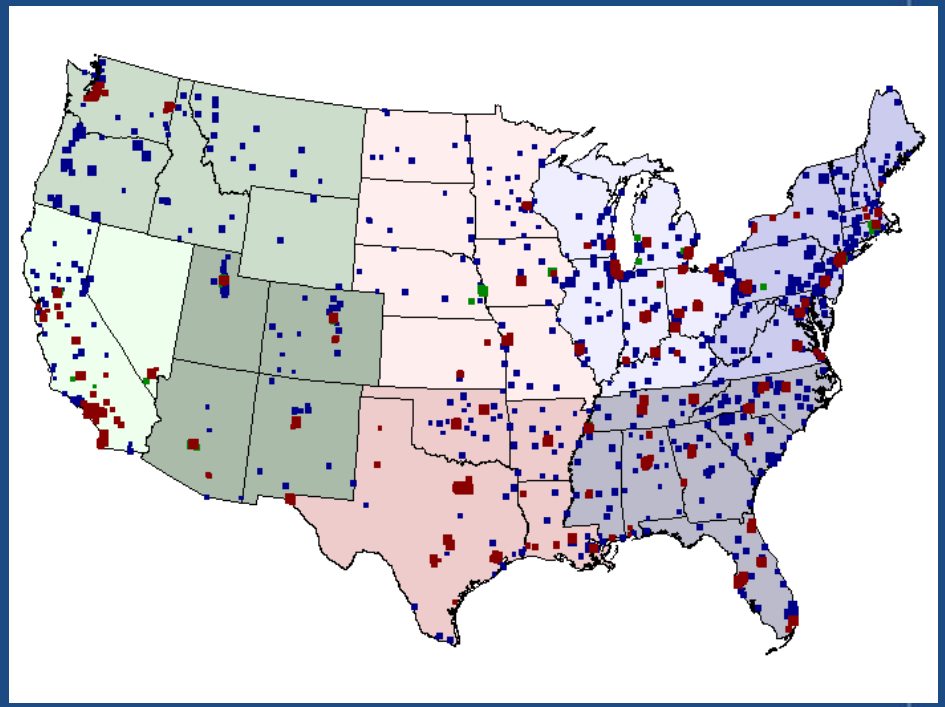



Daily number of hospitalizations for respiratory infections from the National Medicare Cohort and for the six cities. The average numbers of hospitalization events for each city are: 75 (New York); 10 (Baltimore); 5 (Sant Louis), 25 (Houston), 6 (Fresno) and 70 (Los Angeles).

# Medicare Hospitalizations and PM2.5




Yearly hospitalization rates (per 1000) for respiratory infections (1999-2002)



Site locations for PM2.5 monitors in the year 2000.

# Conclusions

- Updating Progress
- Examining Tracking Endpoints
- Training Practitioners & Future Leaders
- Piloting Indicators
- Tracking Applications

# We’re Cruising!